REMARKS

Applicant respectfully requests reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, is presented, with an appropriate defined status identifier.

After entry of the present Amendment and Reply, claims 1-20 are pending in this application.

Rejection Under 35 USC §102(e)

In the Office Action, Claims 1-20 were rejected under 35 U.S.C. 102(e) as being anticipated by Ludwig (U.S. Patent No. 6,543,045). Applicants respectfully traverse the rejection. Ludwig fails to disclose, suggest, or teach the claimed invention as recited in claims 1-20, as amended. Applicants hereby reserve the right to swear behind Ludwig.

On pages 3 and 4 of the Office Action, the Examiner states:

> Ludwig discloses forming a phase shift mask. Critical regions are defined as having a distance between them less than a predefined minimum value. Individual sections of the polygons are assigned phases which have a phase difference of 180°. Figure 8 illustrates a bright-field mask 200 with non-transparent regions 21. Phase shifting elements 22 (hatched polygons) are determined on each side of non-transparent or critical regions 21. When straight sections of the non-transparent regions 21 end within a phase shifting element 22, an end region 23a is generated. End region 23b is generated at the point where a critical region 21 ends at a critical interaction region. Degenerated critical regions are then defined by removing overlapping regions 23 from non-transparent regions 21. The coherent regions that lie outside the phase-shifting regions and the critical regions are determined along with the outer borders of the coherent regions the overlapping regions and the end regions. The number of contact lines between the specific outer borders and the degenerated critical regions is determined and the phase conflict is determined if the number is uneven. The phase conflict

is resolved by defining the region borders (boundary) and obtaining a set of connecting paths between pairs of parallel edges opposite one another of respective polygons. The set of connecting paths is reduced and coverage regions are formed as region boundaries between two different regions of the phase mask to be manufactured such that the coverage regions have phase shifts with a phase difference of 180° degrees. A trim mask may be used for exposing the coverage regions. See col. 4, 18-65, col. 10, 43 – col. 12, 11, col. 15, 8 - col. 16, 34.

Applicants respectfully disagree with the Examiner. Ludwig resolves phase conflicts that result from straight sections of non-transparent regions 21 (Fig. 8) ending within a phase-shifting element 22. **This phase resolution technique described in Ludwig a gap fill procedure.** Simply described, this gap fill procedure involves the creation of a phase shift area in locations where a phase shifting area is too close to another phase shifting area. Ludwig describes this gap filler as "end region 23a" and can be seen in Figs. 10A-C where phase shifting elements 22 are too close to each other.

In contrast, Applicants' claims require that the added boundary regions be defined **"around the defined edges"** (claims 1-9 and 16-20), not just in certain locations where multiple phase shift areas are too close to each other. Claims 10-15 also require construction of a boundary region "around phase 180 regions." Claims 10-15 include a gap fill operation similar to Ludwig *in addition to* constructing boundary regions around phase 180 regions.

Anticipation of a claim by a prior art reference requires that the reference disclose each and every limitation in the claim. Ludwig does not teach the boundary region recited by Applicant's claims. Accordingly, the rejection under 35 U.S.C. §102(e) of claims 1-20 based on Ludwig cannot be properly maintained. Applicants respectfully request the withdrawal of the rejection.

Double Patenting Rejections

In Section 12 of the Office Action, claims 1, 6-9, and 16 are rejected under the judicially-created doctrine of obviousness-type double patenting over claims 1, 3, 7-11 of U.S. Patent No. 6,675,369. In Section 13 of the Office Action, Claims 1, 6-9, and 16 are rejected under the

judicially created doctrine of obviousness-type double patenting over Claims 1, 3, 9-11 of co-pending application No. 10/016,273. Applicants hereby submit a terminal disclaimer to overcome the rejections as U.S. Patent No. 6,675,369; application No. 10/016,273; and the present application are all assigned to the same assignee.

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.
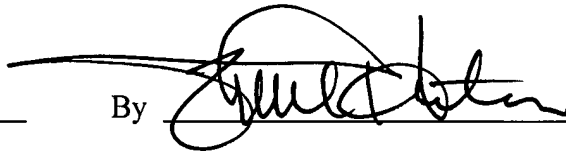
The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 50-2350. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 50-2350. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 50-2350.

Respectfully submitted,

Date _____ 27 APRIL 2004 _____   By _____

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